THE UNIVERSITY OF ALBERTA

COMPARISON OF WISC AND WISC-R SCORES ON REFERRALS TO SCHOOL PSYCHOLOGISTS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled "Comparison of WISC and WISC-R Scores on Referrals to School Psychologists"

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in partial fulfilment of the requirements for the degree of Master of Education

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Abstract

This study compared WISC and WISC-R scores for children referred to school psychologists. A total of six psychologists submitted a total of 83 test protocols, 41 being WISC's and 42 being WISC-R's. Results were analyzed using a one-way analysis of variance with a "t-test" for differences between means and an "F-test" for differences between variances. No significant differences were found between the two groups on the variables of age, sex, and reason for referral. No significant differences were observed in scaled scores between groups on the following nine subtests: Information, Similarities, Arithmetic, Vocabulary, Comprehension, Picture Completion, Picture Arrangement, Block Design, and Object Assembly. On the Coding subtest, WISC-R scaled scores were significantly lower than WISC scaled scores ($p = 0.02$). No significant differences were observed between groups for mean Verbal, Performance, and Full Scale IQ scores. The variability in WISC-R Verbal IQ scores was significantly greater than the variability in WISC Verbal IQ scores ($p = 0.02$)

Results supported the conclusion that WISC and WISC-R scores do not differ significantly for children referred to school psychologists. Support for the claim that the WISC-R is a better discriminator was evidenced by the greater variability in WISC-R Verbal IQ scores.

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Table of Contents

Chapter		Page
I	Introduction	1
	Introduction to the Problem	1
	Background to the Problem	1
	Statement of the Problem	4
	Definition of Terms	4
	Limitations	5
II	Summary of the Research	6
III	Procedure	12
IV	Results	16
	Description of Population	16
	"t-test" Results	16
	"F-test" Results	20
	Other Observations	22
V	Discussion and Conclusions	23
	Mean Scores	23
	Variances	23
	IQ Scores	24
	Implications	24
	Conclusions	25
References		27
Appendices		31
Appendix	I	32
Appendix	II	36
Appendix	III	38

List of Tables

Table		Page
I	Age Distribution of Children Tested by School Psychologists	17
II	Reasons for Referral to School Psychologists for Children Tested	18
III	"t-test" for Differences Between Means for WISC and WISC-R Groups	19
IV	"F-test" for Differences Between Variances for WISC and WISC-R Groups	21

Chapter I

Introduction

Introduction to the Problem

When the Stanford-Binet Intelligence Scale, Form L-M was re-standardized in 1972, marked shifts were revealed in scoring patterns for the current population as compared with the norms established in 1960. Mean IQ's for the 1972 sample using these 1960 norms were 110.4 at age 2 years 0 months, falling gradually to 101.9 at age 10 years 0 months, and rising again to 106.9 at age 18 years 0 months. These shifts from mean IQ's of 100 for each age level were judged to be relevant and genuine and led to the preparation of new tables of norms to suit 1972 conditions (Terman and Merrill, 1973). The Wechsler Intelligence Scale for Children (WISC), on the other hand, still uses its original 1949 norms but Wechsler published a revised and re-standardized form of the test, the Wechsler Intelligence Scale for Children - Revised (WISC-R) in 1974. No attempts to compare the WISC and WISC-R scores were reported, yet these two tests are being used concurrently and at times interchangeably. This present study was therefore undertaken to investigate the differences between WISC and WISC-R scores.

Background to the Problem

The WISC is a widely used individual test of intelligence for children of school age. When administering this test, the trained examiner looks for more than the intelligence quotient itself. Variables such as persistence, motivation, distractibility and anxiety become ap-

parent as the child works through the various subtests. The breakdown between verbal and performance tasks is useful diagnostically. Individual subtest scores indicate patterns of strengths and weakness, and provide estimates of a child's potential as well as overall level of functioning. Furthermore, the WISC can be administered within a comfortable time span without unduly frustrating the child on items of extreme difficulty. Final scores compare the child to his peers.

Within the Edmonton Public School Board's jurisdiction, the WISC has been administered as an integral part of a battery of tests before a child can be admitted to many specialized programs. The WISC scores determine his suitability for the various special classes according to pre-determined cut-off points. For example, an IQ score between 50 and 75 ±5 is required for admission into a class for the Educable Mentally Retarded (Opportunity Class) and an IQ score below 50 ±5 is required for admission into a program for the Trainable Retarded. Classes for the Learning Disabled (Adaptation Classes) require "normal ability" for admission. In each case, an individual intelligence test must be administered to determine a child's ability level. The Department of Education of the Province of Alberta provides teacher grants and foundation grants depending upon the age and status of the special class child, with certain minimum pupil loads specified for each type of class. Other classes qualifying for grants on the basis of diagnosis by qualified specialists such as schod psychologists include Hard of Hearing, Partially Sighted and Institutional settings. A summary of Special Education grants to the Edmonton Public School Board is found in Appendix I.

However, the WISC has limitations which its users feel are beginning to undermine its validity. The test was normed in 1949 on a standardization sample consisting mainly of white, middle-class Americans, but many individuals being referred for testing come from low income, Native and other racial groups. At its age extremes, the WISC norms were inadequate, which makes the test more appropriate for the middle groups from eight to thirteen years of age (Glasser and Zimmerman, 1967). Some of the test items contain strong feeling content or complicated wording, factors which may affect subject response adversely.

In revising and re-standardizing the WISC, Wechsler utilized the suggestions and criticisms of practicing psychologists. Although the new WISC-R retains the structure and format of the original WISC, many items have been modified or replaced and some new materials have been added. Rules for administering the subtests have been modified as well. Representative samples of boys and girls from 6 1/2 through 16 1/2 years of age were chosen on the basis of the 1970 United States Census to establish norms for the test.

As the WISC-R becomes available, psychologists and counselors are using it increasingly to replace the original WISC. New problems have been created by the concurrent use of the two tests. One child may have been administered a WISC a year ago while another has recently been administered a WISC-R. Can scores from the two tests be considered equivalent and if not, what sort of differential exists? At present, results from the two tests are being treated identically when such decisions are being made. There may be further implications in terms of

the number of children selected for special class placement if scores on the WISC-R do differ significantly from WISC scores. Since Wechsler provides no comparisons, a definite need to examine the relationship between scores from the two tests is evident.

Statement of the Problem

This study was designed to compare WISC and WISC-R results for comparable groups of children referred to school psychologists employed by the Edmonton Public School Board. Typically, these children are experiencing academic problems which their home schools feel require assistance and diagnosis beyond the resources of the school itself and many will be under consideration for placement in specialized programs.

Specifically, the following questions were asked:

1. Do the scaled scores for the subtests differ between comparable WISC and WISC-R groups?
2. Do the verbal, performance and full scale IQ scores differ between comparable WISC and WISC-R groups?

Definition of Terms

1. School Psychologist: A person employed by the Edmonton Public School Board as school psychologist, who has received formal training in the administration of individual intelligence tests.
2. Bureau of Child Study: The branch of the Edmonton Public School Board responsible for administering special education programs and assessing the needs of individual children. The school psychologists are responsible to the Director of the Bureau of

Child Study.

Limitations

The population studied is not a representative sample of Edmonton Public School children. Generalizations from these results must be guarded. Several of the school psychologists involved in the study expressed doubts about the sample being representative of the referral population as well. Apparently, referrals for special class placements tend to be heaviest in January and February because deadlines are approaching, and other loadings may occur at other times during the school year.

A second limitation occurred in the procedure. Cooperation to the fullest extent of the design was not promised by the psychologists. Concerns relative to specific cases and convenience of transporting test materials were cited by the psychologists as the reasons for arbitrarily using one or the other of the two tests. A bias toward lower WISC-R scores had been anticipated by the researcher from these procedural problems, because psychologists felt they were obtaining inflated scores with the WISC, and preferred to use the WISC-R.

Chapter II

Summary of the Research

At the time of writing, no studies which compare WISC and WISC-R scores have been reported in the literature. Wechsler (1974) does report comparisons with several other individual intelligence tests. Correlations between the Wechsler Preschool and Primary Scale of Intelligence (WPPSI) and the WISC-R for 50 six year olds were .73 for verbal IQ's, .78 for performance IQ's, and .82 for full scale IQ's with WPPSI IQ's about two points higher. Comparisons between the Wechsler Adult Intelligence Scale (WAIS) and the WISC-R, on a sample of 40 children aged 16 years 11 months, yielded correlations of .96 for verbal IQ's, .83 for performance IQ's, and .95 for full scale IQ's. WAIS IQ's were about six points higher. Interestingly, this difference is similar to the six point spread between the expected results and the obtained results for 18 year olds in the 1972 project leading to new Stanford-Binet norms, as outlined in Chapter 1. Wechsler's comparison of the WISC-R and the renormed Stanford-Binet Intelligence Scale yielded correlations of .63, .71, and .73 between Stanford-Binet IQ's and the verbal, performance, and full scale WISC-R IQ's. Stanford-Binet IQ's were slightly higher for 6, 9 1/2, and 12 1/2 year olds but slightly lower for 16 1/2 year olds. The WISC-R would therefore appear comparable to other major individual intelligence tests as these correlations are high and differences generally small.

Statistically, the WISC-R is itself a rigorously controlled instrument. The population used for standardization very closely approximates the general United States population for each of the variables of sex, race, geographic region, occupation of head of household, and urban-rural residence for the 200 children tested in each of the eleven age ranges from 6 1/2 through 16 1/2 years. Internal reliability and stability are sufficiently high. Wechsler (1974) reports reliability coefficients, using the split-half technique, of .94, .90, and .96 for the verbal, performance, and full scale scores respectively. Reliabilities for each of the individual subtests range between .77 and .86 for the verbal section and between .70 and .85 for the performance section. Stability coefficients over a one-month interval for three groups of children tested twice fell between .89 and .95. Clinicians will feel confident to use this instrument on the strength of these statistics.

Several studies had indicated the need for restandardizing and revising the WISC to overcome the problems associated with its inadequate norming population and its limited ability to discriminate at both the upper and lower levels of intelligence. Roberts (1971a) compared the performance of over 7,000 6 to 11 year olds with the original 1949 norms on the Vocabulary and Block Design subtests. She discovered significantly higher mean scores on Block Design for 7 1/2 year olds and slightly higher means for 10 1/2 year olds. Mean scores on Vocabulary were lower for 7 1/2 year olds but slightly higher for 10 1/2 year olds. Variability on the Vocabulary subtest was greater at both ages but only for the younger groups on Block Design. On the average,

boys outscored the girls more consistently than in the entire 1949 group.

Roberts (1971b) also examined variables relating to population characteristics. She discovered that subjects in the South scored significantly lower than others regardless of race and that a strong positive correlation exists between WISC scores and the socio-economic status of parents. White subjects scored significantly higher than Blacks on both Vocabulary and Block Design and Urban subjects scored higher than their Rural counterparts. Subjects in geographic areas showing rapid population gains scored higher than subjects in areas of decreasing population. Similar findings are reported by Burns (1970) in a study of Negro and White 8 year olds from both lower and upper middle class homes. Regardless of race, children from lower class homes obtained lower scores. The largely middle class White population upon which the WISC was normed is inappropriate as a basis of comparison for other groups.

Hildman and Lowe (1971) were unable to replicate the procedures reported in the WISC manual for classifying parental occupations for purposes of standardization and concluded that the technique used by Wechsler was inadequate for defining a standardization sample.

Sebyra and Arnoult (1968) conclude that the WISC norms are not appropriate for Negro populations. Bowes (1969) concludes that the WISC is not reliable for determining the IQ of Negro children in economically

deprived areas on the basis of gains they made in IQ scores after 20 months in special classes. Whites did not make similar gains. Murray et al (1973) discovered mean IQ scores highest for Anglos and lowest for Blacks on both the WISC and WAIS in their study of 2,498 delinquent boys. A further finding revealed WISC scores significantly lower than WAIS scores, especially among the Blacks.

At the age and ability extremes, discrepancies between WISC IQ's and IQ's from other tests are especially marked. Quereshi and Miller (1970) conclude that the subtest and IQ scores obtained by 17 year olds on the WAIS, WISC and Wechsler-Bellevue II do not meet statistical criteria for equivalence despite evidence for high similarity of format and content. WISC full scale IQ's were consistently higher than scores on the other two tests for this group of students enrolled in regular high school programs. Working with 120 sixteen year old subjects diagnosed as below average in intelligence, Simpson (1970) discovered the reverse. Verbal, performance and full scale IQ scores were significantly higher on the WAIS and he concludes that the WISC and WAIS are not comparable for students of below average intelligence.

At the youngest end of the scale, Wasik and Wasik (1972) report significantly higher WISC than WPPSI IQ's on all of the verbal, performance and full scale measures for 50 culturally disadvantaged 6 year olds. Oakland et al (1971) also found higher WISC than WPPSI scores when studying lower socio-economic status Negro kindergarten children. In this case, Stanford-Binet scores were also higher than scores ob-

tained on the WPPSI which was standardized in 1966.

Zimmerman and Woo-Sam (1972) reviewed the WISC literature for the 1960-1970 decade. They conclude that geographic and cultural factors affect WISC scores more strongly than ethnic origin does, despite the fact that Whites score generally higher than Blacks. The significant variable in the latter case seems to be socio-economic status rather than race. A second conclusion derived from the accumulated evidence places WISC scores generally lower than Stanford-Binet, Form L-M scores. Comparisons between the WAIS and WISC reveal generally that retarded subjects score on the average 10 points higher on the WAIS, while gifted children score higher on the WISC and average children score only slightly higher on the WISC. The authors conclude that the WISC is not very useful for either the retarded or the gifted because its scores are neither low nor high enough.

Clearly, the discrepancies and questions raised in the research regarding WISC IQ scores called for restandardization. The WISC-R fulfills the renorming requirements but it is essentially a new instrument due to the major revisions made in content and administration. For this reason, the WISC-R cannot simply usurp the functions of the WISC in the same way that the new Stanford-Binet norms replace the previous ones.

The wide use of the WISC calls for a close examination of the relationship between the WISC and WISC-R. Zimmerman and Woo-Sam (1972)

comment that the WISC has gained wide usage since 1960, that its validity is unchallenged and that it is the standard by which newer measures are evaluated. A study by Weise (1960) indicates that the WISC is the most frequently used test beyond the Grade two level in California for discriminating retarded children from nonretarded children and Silverstein (1963) states that institutions for the mentally retarded rely on the WISC second only to the Stanford-Binet. The use of the WISC as a diagnostic tool for children with learning disabilities, reading problems and behavioral syndromes such as hyperactivity is well accepted, with research documented in reviews by Zimmerman & Woo-Sam (1972), Glasser & Zimmerman (1967) and Buros (1972). This abundance of data cannot be automatically applied to the WISC-R.

The fact that Wechsler does not report any comparisons between WISC and WISC-R protocols and scores could be termed a remarkable oversight. This type of information is certainly needed.

Chapter III

Procedure

The decision to examine the relationship between WISC and WISC-R scores was made as a result of the complete lack of research in this area. In the Edmonton Public School system, school psychologists have discarded the WISC in favor of the WISC-R, claiming that WISC-R scores discriminate better when children are being screened for specialized programs. Counselors who have been able to obtain WISC-R kits also favor this test. As a result, most current intellectual assessments are carried out with the WISC-R, although a few people through necessity must continue to use the WISC. Children who have been placed on waiting lists for special class placements on the basis of previous WISC scores have not been administered a WISC-R currently. Decisions being made about these children could well be affected by the concurrent use of the two tests. This study was narrowed down to deal specifically with this problem thus making Edmonton Public School children referred for intellectual assessments the appropriate population for observation.

In order to insure for profesisonal competency, the aid of Edmonton Public School Board school psychologists was requested by approaching its Bureau of Child Study. The Director of the Bureau agreed that the project warranted the assistance and support of Bureau personnel and a memorandum (See Appendix II) was sent to each of the eight school psychologists assigned respectively to each of the eight sectors of the city.

Each psychologist was requested to begin the project immediately upon receipt of the memorandum by alternating the use of the WISC and the WISC-R on his next 14 referrals for intellectual assessments, so that each test would be administered seven times. Sufficient copies of WISC and WISC-R protocol sheets (See Appendix III) were included to enable the psychologists to record age, sex, birthdate, raw scores, scaled scores, IQ scores and reason for referral for each child tested and return them to the investigator. An approximate time of one month was anticipated for the collection of data.

Although the population selected was not randomly chosen and was not expected to be representative of the total population of Edmonton Public School Children, it seemed reasonable to assume that the sample would be a fairly good approximateion of the school system's referral population. Firstly, all referrals to the school psychologists for the duration of the project were to be tested rather than a selected fraction. This technique eliminated, to some extent, the need for random selection of subjects. Secondly, the eight sectors into which the school system is divided insured that subjects were being drawn from a broad population base. Thirdly, the procedure of assigning the first referral a WISC, the second a WISC-R, the third a WISC and so on was designed to control for tester bias in the use of one or the other of the tests for each case.

However, the psychologists involved expressed some reservations concerning the necessity of testing alternately with the WISC and WISC-R.

Some were adamant that for specific cases, they might wish to use the WISC-R to obtain a rating because of their belief in its superior discriminative power with the stated expectation that WISC-R scores tend to be lower. In fact, alternating order of testing was not strictly adhered to and only six of the eight psychologists submitted data. The two sectors of the city omitted were not considered by the researcher to differ from the other sectors in any important aspect which would likely influence the results, as both contained a broad mix of socio-economic and ethnic groups. Testing results were collected over a three-month rather than a one-month interval and the number of protocols submitted by each psychologist varied. A total of 41 WISC and 42 WISC-R protocols was obtained.

For the analysis, ages were converted to months, excluding partial months. Scaled scores were tabulated for the following ten subtests: Information, Similarities, Arithmetic, Vocabulary, Comprehension, Picture Completion, Picture Arrangement, Block Design, Object Assembly, and Coding. The verbal, performance, and full scale IQ scores for each subject were also tabulated, making a total of 14 variables. Mean scores for each variable for each group were tabulated.

The null hypothesis that the WISC and WISC-R groups would not differ significantly on any of the variables under study was assumed. A one-way analysis of variance utilizing a two-tailed "t-test" for differences between means of independent samples and an "F-test" for differences between variances was computed. A probability level of .05 was required for rejection of the null hypothesis.

No statistical analysis was applied to the data obtained under reasons for referral but this information was divided by inspection into five categories: Special Class Assessment, Reading and Perceptual Problems, Behavior Problems, General Assessment (poor progress, immaturity, ability level doubtful) and Other. A summary appears in Chapter 4, Table II.

Chapter IV

Results

Description of Population

A total of 83 children was tested. Of these, 41 received a WISC and 42 received a WISC-R In the WISC group, 25 males and 15 females were tested and the sex of one subject was not specified. In the WISC-R group, 25 males and 17 females were tested. Age ranges for the two groups are summarized in Table I, which shows them to be comparable. The youngest child assessed was 6 years 3 months of age and the oldest was 15 years 4 months. Table II depicts a summary of the reasons for referral for the two groups and shows that they are comparable. On the variables of age, sex and reason for referral, the WISC and WISC-R groups are therefore very similar.

"t-test" Results

A "t-test" for differences between means of independent samples was computed to test the hypothesis that mean scores for WISC and WISC-R groups would not differ. Fourteen variables were tested and results are summarized in Table III.

Small, non-significant differences were observed between the means of 13 of the variables: age means; means for the Information, Similarities, Arithmetic, Vocabulary, Comprehension, Picture Completion, Picture Arrangement, Block Design, and Object Assembly sub-

Table I

Age Distribution of Children Tested
By School Psychologists

Age in Years	WISC Group	WISC-R Group
6	5	7
7	5	5
8	6	2
9	5	8
10	5	6
11	4	2
12	3	5
13	4	2
14	4	3
15	0	2
Total	41	42

Table II

Reasons for Referral to School Psychologists for Children Tested

Reason for Referral	WISC Group	WISC-R Group
Special Class Assessment	8	11
Reading and Perceptual Problems	8	7
Behavior Problems	2	3
General Assessment	18	17
Other	5	4
Total	41	42

Table III

"t-test" for Differences Between Means for WISC and WISC-R Groups

Variable	WISC Mean	WISC-R Mean	WISC S.D.	WISC-R S.D.	DF	t	P
Age (Months)	121.51	120.88	30.10	31.97	81	0.093	.92
Information	8.15	8.24	1.88	2.54	81	-0.187	.85
Similarities	10.54	10.19	2.29	2.51	81	0.655	.51
Arithmetic	9.20	9.50	2.36	2.55	81	-0.565	.57
Vocabulary	9.61	9.21	2.55	3.10	78	0.611	.54
Comprehension	8.93	9.36	2.70	2.43	78	-0.751	.45
Picture Completion	10.39	10.76	2.64	2.61	81	-0.644	.52
Picture Arrangement	10.20	10.83	2.66	2.57	81	-1.113	.26
Block Deisgn	10.10	10.19	2.26	2.78	81	-0.167	.86
Object Assembly	10.68	10.98	2.93	2.74	73	-0.456	.64
Coding	11.37	9.93	3.02	2.73	80	2.261	.02
Verbal IQ	95.68	95.31	8.97	13.25	81	0.150	.88
Performance IQ	103.83	103.48	10.49	12.62	81	0.138	.89
Full Scale IQ	99.54	98.83	9.06	12.07	81	0.300	.76

tests; and means for the Verbal IQ, Performance IQ, and Full Scale IQ scores.

A significant difference was observed between means on the Coding subtest ($p = 0.02$). The WISC-R mean scale score was smaller than the WISC mean scale score by a margin of 1.44 scale score points.

With the exception of the Coding subtest, the hypothesis of no significant difference between means for the WISC and WISC-R groups was supported.

"F-test" Results

An "F-test" for differences between variances was computed to test the hypothesis that variances would not be significantly different on the 14 variables measured in the WISC and WISC-R groups. Results are summarized in Table IV.

Variances in ages between the two groups did not differ significantly.

Variances in scale scores for each of the ten subtests did not differ significantly. On the Information subtest, however, the variances approached a significant difference ($p = 0.06$) with the WISC-R group showing the larger variance.

Variances in Verbal IQ scores differed significantly ($p = 0.02$).

Table IV

"F-test" for Differences Between Variances for WISC and WISC-R Groups

Variable	Variance		DF1	DF2	F	P
	WISC	WISC-R				
Age (Months)	906.06	1022.30	40	41	0.886	0.704
Information	3.53	6.43	40	41	0.549	0.060
Similarities	5.25	6.30	40	41	0.834	0.566
Arithmetic	5.56	6.50	40	41	0.856	0.623
Vocabulary	6.52	9.64	37	41	0.676	0.231
Comprehension	7.27	5.92	40	38	1.228	0.527
Picture Completion	6.99	6.82	40	41	1.026	0.935
Picture Arrangement	7.06	6.58	40	41	1.073	0.823
Block Design	5.09	7.72	40	41	0.659	0.190
Object Assembly	8.59	7.52	33	40	1.142	0.684
Coding	9.14	9.63	40	40	0.949	0.868
Verbal IQ	80.47	175.54	40	41	0.458	0.015
Performance IQ	110.05	159.18	40	41	0.691	0.245
Full Scale IQ	82.10	145.65	40	41	0.564	0.072

The WISC-R group showed the greater variance. Performance IQ scores did not show significantly different variances but the Full Scale IQ scores approached a significant difference ($p = 0.07$) in variance with the WISC-R scores showing the greater variance.

The hypothesis of no significant difference between variances in WISC and WISC-R scores was supported with the exception of the Verbal IQ scores. Variances for the Information subtest and the Full Scale IQ scores approached significant differences.

Other Observations

In both the WISC and WISC-R groups, the Verbal IQ scores are lower than the Performance IQ scores by about 8 points. Full Scale IQ scores are very close to 100 for both groups. Actual mean scores are shown in Table III which also depicts the "t-test" results. Mean Verbal subtest scores are all below 10 in both groups with the exception of Similarities. The Information subtest has the lowest mean scores for both groups. With the exception of Coding in the WISC-R group, none of the mean Performance subtest scores is below 10.

Implications are discussed in Chapter V.

Chapter V

Discussion and Conclusions

Mean Scores

The null hypothesis was essentially supported by this study. WISC and WISC-R scores did not differ significantly on any of the variables studied except for the Coding subtest. An examination of the tables of norms for the Coding subtest shows that raw scores on the WISC-R yield lower scale scores than identical raw scores on the WISC. Directions for administration are almost identical on the two tests, but some color has been added to the symbols on the WISC-R.

Considering the criticism of WISC norms outlined in Chapter II, and the highly acceptable, rigidly controlled statistical techniques used to develop new WISC-R norms, it is interesting to note the lack of significant differences between IQ scores obtained by the two groups in this study. The apparent concensus of WISC norms being too high would appear to have been negated over time by the influence of such things as mass exposure to television, increased leisure time to spend with children and the modern emphasis on early childhood programs in daycare, playschool and kindergarten settings.

Variances

One of the main criticisms of the WISC was its failure to discriminate adequately among children of low ability and among children of high ability. Although no effort was made in this study to compare

scores of children on the WISC and the WISC-R at specific age or ability levels, the "F-test" for differences in variances provided some information relevant to this problem. Significantly greater variability occurred in WISC-R Verbal IQ scores than in WISC scores, and the Full Scale WISC-R IQ scores approached a significantly greater difference. These results may indicate that the WISC-R does discriminate better than the WISC by providing a greater range of scores for comparable groups of children.

IQ Scores

Verbal IQ scores for the WISC and WISC-R were 95.68 and 95.31 respectively and performance IQ scores were 103.83 and 103.48 respectively. This 8 point spread between Verbal and Performance IQ scores which is characteristic of both groups is attributable to the fact that this is a referred population of children experiencing difficulties in school. Verbal skills are generally essential for school success and would be expected to be weaker than performance skills for this group.

Mean Full Scale IQ scores were 99.54 and 98.83 for the WISC and WISC-R groups respectively. All mean IQ scores, Verbal and Performance included, fell within the normal range of 90-110. The technique used in selecting this sample produced means in the average range. This referred population was not a low ability group of children.

Implications

In terms of the purpose of the study which was to examine WISC

and WISC-R scores for differences when children are being screened for specialized school programs, the problem of the concurrent use of the two tests can be resolved by concluding that no problem exists. Scores obtained on the two tests are essentially comparable. Perhaps better selection will occur with the WISC-R because of the greater variability in its scores but this study does not indicate that the numbers of children chosen for special programs will change. Implications in terms of classroom loads and government funding are therefore unimportant.

In terms of further research, the following implications exist:

1. A larger sample of children drawn randomly from the total population should be studied to determine whether the findings from this study are general.
2. A study of children specifically regarded as Borderline and Educable Mentally Retarded is necessary to determine whether WISC and WISC-R scores are comparable for these groups and/or if the WISC-R a better discriminator.
3. Replication of WISC research with WISC-R research is necessary to determine whether the two tests are comparable for factors other than scores. For example, studies of factorial loadings and profiles indicative of various learning, behavioral, and brain damage syndromes should be examined for comparable WISC and WISC-R groups.

Conclusions

One main conclusion can be drawn from this study: scores on the WISC and the WISC-R are essentially comparable for children referred to

school psychologists. Two areas of non-comparability were discovered:

1. WISC-R Coding scale scores were significantly lower than on the WISC.
2. WISC-R Verbal IQ scores show greater variability than WISC Verbal IQ scores.

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Appendices

Appendix I

Summary of Guidelines for Special Education Grants to Edmonton Public School Board (Revised, April 7, 1975)

Appendix I

Description of Grants

Special Education Grants are Teacher grants and are paid to enable school systems to serve a variety of handicapped students. Grants vary in amount and in the number of students required for authorization depending on the nature of the handicap and the degree of personal attention it demands.

In addition to the Special Education Teacher Grants, students qualify for Foundation Grants at either the Elementary, Junior High or Senior High level depending on age -- Elementary Grants for pupils at least 5 years 6 months but less than 12 years of age, Junior High for 12 years of age but less than 15 and Senior High for 15 years of age to 24 years.

Qualifying Requirements and Level of Grant

Class	Disability	Minimum Pupil Load	Diagnostic Requirements	Grant
A	Educable Mentally Retarded (Opportunity Class)	10	IQ 75 ± 5	$ 8,500
	Partially Sighted Itinerant	10	as for Class	$11,500
	Resource Centre	10	as for Learning Disabled	$ 8,500
B	Trainable Retarded	7	IQ 50 ± 5	$10,400
	Institutional	7		$10,400
	Homebound	7	Confining Child to Home or Institution	$10,400
C	Learning Disabled (Adaptation)	6	Normal Ability with Perceptual or Social Disability	$11,000
	Learning Disabled (Mild) (Pre-Vocational) to	10 15		$ 8,500
	Hard of Hearing	6	16 - 81 decibel hearing loss	$11,000
	Itinerant Service	10		$11,000
	Partially Sighted Class	6	20/70 (6/21) or less acuity or limited field in better eye	$11,000
	Itinerant Service	10		$11,000
D	L.Y. Cairns	6	IQ 75 ± 5	$12,800
E	Braille Class for Blind	3	20/200 (6/60) acuity or less in better eye	$12,800

N.B. Grants are also proposed for teachers of New Canadian Classes in English. Should be checked with C. Daneliuk re location.

Application Procedures

1. Children must be properly diagnosed by qualified specialist (Bureau Staff of Counselor registered with the Department of Education as a qualified diagnostician).
2. Children are assigned to classes.
3. Forms are completed showing name of school or centre, name of teacher, F.T.E. of teacher time, type of service, nature of handicap of student and class enrolment. These must be submitted at end of October showing September and October enrolment in each class.
4. Approval of classes and teachers is received from the Department of Education, usually late December.
5. School System submits grant application form. A new form is in process of development - both old and new forms are attached. The new forms may also involve a change in procedure. Apparently the Department is now paying in January for the fall term plus an advance on the spring term. Final application form is, I understand, to be submitted at the end of June. These forms will probably be the updated form previously submitted at end of October.

Appendix II

Memorandum to School Psychologists

Appendix II

December 10, 1974

MEMORANDUM

To: School Psychologists

From: John Loewen, Counselor
(Approved by K.M. Grierson)

A question of some urgency has now confronted educational diagnosticians with the addition of the WISC-R to our testing repertoire. How comparable are WISC-R and WISC scores? Will results from the WISC-R significantly alter the proportion of students presently recommended for special classes for example? To provide an answer to this and related questions, we are requesting your cooperation in conducting the following study:

1. Beginning immediately, alternate the use of the WISC and the WISC-R on all intellectual assessments you make, to a total of 14 assessments (seven administrations of each test).

2. Complete a test protocol which includes the following information:

   Age
   Sex
   Birthdate
   Raw scores, scaled scores, IQ scores
   Reason for referral

   Use the enclosed forms, or photocopy the front cover of your test protocol.

3. Forward the test protocols to:

   John Loewen
   Delwood Elementary School
   7315 Delwood Road
   Edmonton, Alberta

4. Hopefully, all the data will be in by the end of January. The analyzed results should be available to you by the end of February.

5. If you have questions, phone John Loewen at one of the following numbers:

   Monday, Wednesday, Friday, a.m. - 475-2988
   Tuesday, Thursday, Friday, p.m. - 476-6336
   Evenings - 459-5283

Appendix III

WISC and WISC-R Protocol Sheets